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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Farquhar *et al.*

Examiner: Goff II, John L.

Serial No.: 09/781,730

Art Unit: 1733

Filed: 2/12/01

For: SEMICONDUCTOR DEVICE HAVING A THERMOSET-CONTAINING
DIELECTRIC MATERIAL AND METHODS FOR FABRICATING THE SAME

Commissioner for Patents
P.O. Box 1450
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REQUEST FOR REHEARING FOLLOWING
DECISION ON APPEAL, UNDER 37 CFR § 1.197(b)

This request for rehearing, under 37 CFR § 1.197(b), follows the decision on appeal issued by the Board of Patent Appeals and Interferences on February 24, 2004.

This request for rehearing is specific to claim 35, wherein the Board stated: "The appellants argue that curing can dry a solventless resin (reply brief, page 6). The appellants provide no evidence in support of this argument but, rather merely rely upon attorney evidence. Such argument of counsel cannot take the place of evidence." Appellants respectfully contend that the preceding statement by the Board includes two misapprehensions. In addition, the Board appears to have had a third misapprehension relating to whether a liquid resin to be cross linked must contain solvent. Appellants next discuss the three misapprehensions, followed by a summary of Appellants' Argument as presented in the Reply Brief with respect to claim 35.

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First Misapprehension

The first misapprehension is that the Board incorrectly states Appellants' argument. The Board states: "appellants argue that curing can dry a solventless resin." Rather, Appellants argued in the Reply Brief that it is not inherent that a liquid resin has solvent, and that it is thus not inherent for the resin that is dry after being cured to include a solvent prior to being cured.

Appellants have not argued that the curing dries the solventless resin. Such an argument is incorrect. Drying is a physical process caused by the addition of heat. Curing is a chemical process effectuated by cross linking which increases the molecular weight of the substance being cured. Curing and drying are independent processes and curing does not cause drying. In fact, any liquid (solvent or non-solvent) that accompanies the pre-cure resin does not in any way participate in the chemical reaction of the cross linking that causes the curing of the resin. The Board's misapprehension of Appellants' argument is so severe that Appellants respectfully submit it was virtually impossible for the Board to have objectively evaluated Appellants argument in the Reply Brief in relation to claim 35.

Second Misapprehension

The second misapprehension is reflected in the Board's statement that "appellants provide no evidence in support of this argument but, rather merely rely upon attorney evidence". The preceding statement by the Board is a second misapprehension caused by the first misapprehension. The Board's conclusion that "appellants provide no evidence in support of this argument" relies on the incorrect assumption that Appellants argued that "curing can dry a solventless resin".

Appellants respectfully contend that Appellants fully supported, with citations to published references, its true argument in the Reply Brief with respect to claim 35. The following Steps 1, 2, and 3 comprises a summary of Appellants' foundation argument in the Reply Brief, from which Appellants have derived its conclusion.

Step 1 of Appellants' foundation argument is that the curing of a resin is effectuated by a cross-linking chemical reaction involving the resin in which the reaction product has a higher molecular weight than does the uncured resin (supported by Reference 1, as cited in Reply Brief, page 6, lines 14-17). Reference 1 is:

"<http://composite.miningco.com/library/glossary/c/bldef-c1411.htm>".

Step 2 of Appellants' foundation argument is that cross linking and consequent curing of the material "will occur upon heating" (supported by Reference 2, as cited in Reply Brief, page 6, line 18 - page 7, line 21). Reference 2 is: U.S. Patent Application 2003/0118835 (Jayaraman, Saikumar et al.; June 26, 2003).

Step 3 of Appellants' foundation argument is that the polymer produced from the cross-linking of the material can be controlled to be tacky, elastomeric, tough, glassy (supported by Reference 2, as cited in Reply Brief, page 7, lines 1-3).

Thus, Steps 1, 2, and 3 of the preceding foundation argument is not merely an attorney argument, but rather is an argument fully supported by published material available to a person of ordinary skill in the art, as well as to the public generally.

Appellants stated their conclusion, based on the preceding foundation argument, in the Reply Brief, page 6, lines 10-12: "the dry state of the cured resin could also be achieved through the curing process itself which produces a dry, cross-linked material of higher molecular mass,

regardless of whether or not the resin includes solvent". The preceding conclusion has two aspects to be considered.

A first aspect of the preceding conclusion is that the resultant cross-linked material is in a dry state, which inherently follows from Step 3 *supra*, since a material that is "tacky, elasomeric, tough, glassy" is inherently dry.

A second aspect of the preceding conclusion is the more relevant issue, namely Appellants' assertion that the starting material of liquid resin to be cross linked does not require the resin to include a solvent. Appellants' assertion follows from Step 2 *supra* which argues that the cross linking and consequent curing "will occur upon heating", based on a citation of Reference 2. The preceding requirement of adding heat means that the cross linking and consequent curing is thermally driven. Appellants acknowledge that Reference 2 does not specifically state that cross linking can be accomplished without a solvent. However, a reference generally states what is required and does not generally state what is not required to effectuate a process, since there are an endless number of non-requirements with respect to any process.

In addition, it is well known by ordinary organic chemists that cross linking of a material does not require the material to be dissolved in a solvent. In fact, why would one even conjecture that to cross link a substance, the substance must be dissolved in a solvent? Such a conjecture is purely speculative and inconsistent with fundamental chemistry, since **the solvent if present does not even partake in the cross-linking chemical reaction**. If evidentiary support is required at all, the one who should produce evidentiary support is the one who conjectures that to cross link a substance the substance must be dissolved in a solvent, since there is no reason based on fundamental organic chemistry to make such a conjecture.

Appellants' argument that the starting material to be cross linked does not require solvent is based on basic and fundamental organic chemistry, as explained *supra*, and does not require a citing reference. To require Appellants to cite a reference for the preceding material would be akin to requiring Appellants to cite a reference to prove that bonds between atoms in an organic compound are due to covalent forces rather than ionic forces. Although Appellants are required to provide evidentiary support for statements that represent an unproven theory (e.g., the conjecture that to cross link a substance, the substance must be dissolved in a solvent), Appellants are not required to provide evidentiary support for statements that reflect basic and fundamental organic chemistry and would be considered as such by one of ordinary skill in the art of organic chemistry. As the Board correctly states and supports by case law: "Such argument of counsel cannot take the place of evidence." Appellants respectfully submit that Appellants have not presented an argument that is taking the place of evidence, since Appellants have not asserted anything that is unproven or questionable in the absence of supporting evidence.

In summary, Appellants have explained herein that Appellants have indeed fully supported its argument in the Reply Brief by citations to the published literature. Therefore, Appellants' arguments are not taking the place of evidence as in the cases cited by the Board.

Third Misapprehension

Appellants refer to the Board's analysis in the Decision On Appeal, page 7, lines 14-19: "Johnson's disclosure that the resin in example 1 was converted into a dry, semi-cured state (col., line 47) indicates that the resin was both dried, i.e., its solvent removed, and semi-cured. If the liquid resin were solventless, it reasonably appears that Johnson merely would have stated that

the resin is semi-cured.” Applicant respectfully submit that the preceding analysis by the Board constitutes a third misapprehension by the Board because the Board appears to be using the words “solvent” and “liquid” interchangeably even though it is incorrect to assume that a liquid must be a solvent. For clarification, Appellants note that a solvent with respect to a resin has the property of being able to dissolve the resin, by the universally accepted definition of “solvent”.

In the preceding analysis by the Board, the Board correctly concludes that the resin of Johnson was dried and semi-cured. This conclusion by the Board implies removal of **liquid** from the resin as effectuated by the drying. However, the Board did not conclude specifically that liquid was removed from the resin, but rather concluded that **solvent** was removed from the resin. Therefore, the Board appears to have assumed that the liquid that accompanies the resin was a solvent, even though Johnson never stated that the liquid is a solvent. If the Board made this assumption, then the Board’s reasoning was conclusory and based on circular reasoning since the Board would have reached its conclusion from the very assumption that the Board attempted to prove. If the Board did not make this assumption, then the Board overlooked the realistic possibility that the liquid resin could be present with any dissolving occurring, inasmuch as a “solvent” requires dissolving by definition. In either situation, there was a misapprehension by the Board, which is a basis for granting a rehearing.

Appellants’ Argument Relating To Claim 35

Assuming that the Board is willing to grant a rehearing, Appellants next reiterate Appellants’ argument that already appears in the Reply Brief, which the Board did not previously consider to be credible based on the Board’s prior misapprehension that evidentiary support was

lacking. As explained *supra* in the “Second Misapprehension” section, Appellant argues that: 1) the curing of a material is effectuated by a cross-linking chemical reaction involving the resin; 2) cross linking and consequent curing of the material is effectuated by heating; and 3) the polymer produced from the cross-linking of the material can be controlled to be tacky, elasomeric, tough, glassy. As also explained *supra*, the resultant cross-linked material could be dry, since a material that is “tacky, elasomeric, tough, glassy” is inherently dry or could be dry.

The focal issue is whether liquid in the liquid resin to be cross linked must be a solvent, in light of the cross-linking process that accompanies the curing of the starting resin. Appellants’ statement on page 6, lines 12-13 of the Reply brief, namely “it is not inherent for the thermosetting resin to include solvent” means that is not inherent for the thermosetting resin to exist in a dissolved state, since a solvent, by definition, is characterized by its ability to dissolve material therein. Since the Board did not previously review Appellants’ arguments as they were truly presented due to the misapprehensions stated *supra*, Appellants respectfully request a rehearing with a re-examination of Appellants’ arguments as they were truly presented in the Reply Brief with respect to claim 35.

In particular, Applicants respectfully request that the Board reconsider Appellants’ argument in light of the Board’s misapprehensions, discussed *supra*. Based on the Third Misapprehension, Appellants respectfully submit that it is incorrect to conclude that the liquid in the liquid resin is **inherently** a solvent, since the Board’s reasoning to conclude that the liquid resin is **inherently** a solvent is either conclusory based on circular reasoning (as explained *supra*) or is based on overlooking the realistic possibility that the liquid resin could be present with any dissolving occurring, inasmuch as a “solvent” requires dissolving by definition.

Conclusion

Based on the preceding arguments, Appellants respectfully request a rehearing for claim 35 relative to the decision on appeal issued by the Board of Patent Appeals and Interferences on February 24, 2004, with a re-examination of Appellants' arguments as they were truly presented in the Reply Brief.

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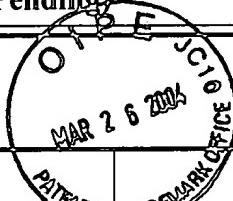
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TRANSMITTAL LETTER
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Docket No.
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In Re Application Of: Farquhar et al.



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Goff II, John L.

Group Art Unit
1733

Title: SEMICONDUCTOR DEVICE HAVING A THERMOSET-CONTAINING DIELECTRIC MATERIAL AND
METHODS FOR FABRICATING THE SAME

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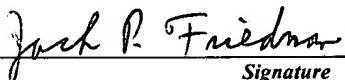
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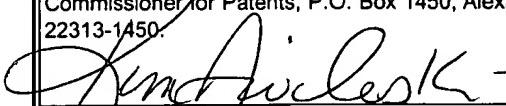


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